

In the Claims

1. (Original) A method for the stabilisation and disposal of elemental mercury, said method comprising treating the elemental mercury with a cementitious particulate filler material, wherein said method additionally comprises an immobilisation treatment.
2. (Currently amended) A The method as claimed in claim 1 wherein said immobilisation treatment comprises a stabilisation treatment comprising sulphur stabilisation, sulphur polymer stabilisation/solidification or the formation of a chemically bonded phosphate ceramic.
3. (Currently amended) A The method as claimed in claim 1 wherein said immobilisation treatment comprises an amalgamation process.
4. (Currently amended) A The method as claimed in claim 1 ~~or 3~~ which comprises:
 - (a) treating elemental mercury with an amalgamating metal; and (b) treating the resulting amalgam with a cementitious particulate filler material.
5. (Currently amended) A The method as claimed in claim ~~3 or 4~~ wherein said amalgamation process comprises treating elemental mercury with an amalgamating metal and a dilute aqueous acid.
6. (Currently amended) A The method as claimed in claim 5 which comprises:
 - (a) treating elemental mercury with an amalgamating metal and a dilute aqueous acid;
 - (b) subjecting the resulting mixture to vigorous agitation to form an amalgam sludge;
 - (c) adding a cementitious particulate filler material to the amalgam sludge with stirring; and
 - (d) allowing the resulting mixture to cure.
7. (Currently amended) A The method as claimed in claim 4 ~~any one of claims 4 to 6~~ wherein said amalgamating metal comprises copper, silver, gold, zinc or tin.
8. (Currently amended) A The method as claimed in claim 7 wherein said amalgamating metal is copper.

9. (Currently amended) A The method as claimed in claim 4 ~~any one of claims 4 to 8~~ wherein said amalgamating metal is provided in the form of a fine powder.
10. (Currently amended) A The method as claimed in claim 4 ~~any one of claims 3 to 9~~ wherein the ratio of mercury to amalgamating metal is between 1 :4 and 1:1 w/w.
11. (Currently amended) A The method as claimed in claim 10 wherein said ratio is in the region of 2:3 w/w.
12. (Currently amended) A The method as claimed in claim 5 ~~any one of claims 5 to 11~~ wherein said dilute aqueous acid comprises a dilute aqueous mineral acid.
13. (Currently amended) A The method as claimed in claim 12 wherein said dilute aqueous mineral acid comprises dilute nitric acid.
14. (Currently amended) A The method as claimed in claim 5 ~~any one of claims 5 to 13~~ wherein the acid concentration is in the region of 1M to 0.01M.
15. (Currently amended) A The method as claimed in claim 14 wherein said acid concentration is around 0.1M.
16. (Currently amended) A The method as claimed in claim 5 ~~any one of claims 5 to 15~~ wherein the acid is present at a ratio of 1 :2 to 2: 1 w/v in relation to the amalgamating metal.
17. (Currently amended) A The method as claimed in claim 16 wherein said ratio of acid to amalgamating metal is 1 : 1 w/v.
18. (Currently amended) A The method as claimed in claim 6 ~~any one of claims 3 to 17~~ wherein agitation of the amalgamation reaction is discontinued after a period of less than 15 minutes.
19. (Currently amended) A The method as claimed in claim 18 wherein the agitation is discontinued after 5-10 minutes.
20. (Currently amended) A The A method as claimed in claim 3 ~~any one of claims 3 to 19~~ wherein additional water is added to the mixture during the addition of the cementitious particulate filler material to the amalgam sludge in order to preserve the consistency of the mixture throughout the addition process.

21. (Currently amended) A The method as claimed in claim 3 ~~any one of claims 3 to 20~~ wherein the cementitious particulate filler material is added to the amalgam sludge in a ratio of from 4:1 w/w (cementitious material to amalgam) to 1:2 w/w.
22. (Currently amended) A The method as claimed in claim 21 wherein said ratio is from 3:1 w/w to 1:1 w/w.
23. (Currently amended) A The method as claimed in claim 22 wherein said ratio is around 1 : 1 w/w.
24. (Currently amended) A The method as claimed in claim 1 ~~any one of claims 1 to 23~~ wherein said cementitious particulate filler material comprises Ordinary Portland Cement (OPC).
25. (Currently amended) A The method as claimed in claim 1 ~~any preceding claim~~ wherein said cementitious material comprises at least one additional filler.
26. (Currently amended) A The method as claimed in claim 25 wherein said at least one additional filler comprises at least one additional inorganic filler.
27. (Currently amended) A The method as claimed in claim 25 wherein said at least one additional filler comprises pulverised fuel ash, hydrated lime, finely divided silica, limestone flour or organic and inorganic fluidising agents.
28. (Currently amended) A The method as claimed in claim 25 ~~or 26~~ wherein said at least one additional filler comprises Blast Furnace Slag (BFS).
29. (Currently amended) A The method as claimed in claim 25 ~~any one of claims 25 to 28~~ wherein said cementitious material comprises additional filler and cementitious particulate material in a ratio of from 5:1 to 1:1 w/w.
30. (Currently amended) A The method as claimed in claim 29 wherein said ratio is in the region of 3:1 w/w.
31. (Currently amended) A The method as claimed in claim 1 ~~any preceding claim~~ wherein the resulting mixture is allowed to cure at ambient temperature.
32. (Currently amended) A The method as claimed in claim 31 ~~any preceding claim~~ wherein the resulting mixture is allowed to cure for a period of around 24-48 hours.

33. (Currently amended) ~~A~~ The method as claimed in claim 25 ~~any preceding claim~~ whenever applied to the safe disposal of elemental mercury which is contaminated with radioactive materials.